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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/821,585  | 04/09/2004  | Aamod Khandekar      | 030304              | 1901             |
| 23596 7590 06/10/2009<br>QUALCOMM INCORPORATED<br>5775 MOREHOUSE DR.<br>SAN DIEGO, CA 92121 |             |                      |                     |                  |
| EXAMINER  |             |                      |                     |                  |
| MALEK, LEILA  |             |                      |                     |                  |
| ART UNIT  |             | PAPER NUMBER         |                     |                  |
| 2611  |             |                      |                     |                  |
| NOTIFICATION DATE   |             | DELIVERY MODE        |                     |                  |
| 06/10/2009  |             | ELECTRONIC           |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/821,585

**Applicant(s)**

KHANDEKAR ET AL.

**Examiner**

LEILA MALEK

**Art Unit**

2611

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-9,11,12,14-16,20,21,25,26,28 and 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20,21,25 and 26 is/are allowed.
- 6) ☒ Claim(s) 1,3-9,11,12,14-16,28 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 April 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 04/10/2009
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/10/2009 has been entered.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 3-9, 11, 12, 14-16, 28, and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As to claims 1, 12, 16, 28, and 31, Applicant fails to disclose how the steps of "detecting errors in the data symbol estimates based on the remodulated symbols; setting LLRs for code bits of the data symbol estimates detected to be in error to erasures for decoding" and "deriving correction factors for the data symbol estimates detected to be in error; and updating the LLRs for code bits of the data symbols estimates detected to be in error" can work together. Applicant in

invention's disclosure, paragraph 0064, discloses that in a first error compensation scheme, enhancement stream LLRs corresponding to data symbol estimates that are in error are given no weight in the decoding process. This can be achieved by setting these LLRs to erasures. Therefore limitations "detecting errors in the data symbol estimates based on the remodulated symbol; setting LLRs for code bits of the data symbol estimates detected to be in error to erasures for decoding", are directed to the first error compensation scheme. Applicant in paragraph 0065 discloses that in a second error compensation scheme, the enhancement stream LLRs obtained with data symbol estimates that are in error are updated based on the remodulated symbol after the base stream has been decoded. Applicant further discloses (see paragraph 0069) that if the second error compensation scheme is used, symbol error detector computes a correction factor for each data symbol estimate that is in error. Therefore, limitations "deriving correction factors for the data symbol estimates detected to be in error; and updating the LLRs for code bits of the data symbols estimates detected to be in error", are directed to the second error compensation scheme. Applicant in invention's disclosure fails to disclose a method for adjusting the enhancement LLRs by using the combination of first error compensation scheme and second error compensation scheme, in a way to enable one skilled in the art to use the same method.

***Allowable Subject Matter***

3. Claims 20, 21, 25, and 26 are allowed. The following is a statement of reasons for the indication of allowable subject matter: as to claim 20, a comprehensive search of prior art of record fails to teach either alone or in combination a method of performing

data detection in a wireless communication system, comprising: deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission; deriving uncoded data symbol estimates for the first data stream based on the received symbols or the LLRs for the code bits of the first data stream; decoding the LLRs for the code bits of the first data stream to obtain decoded data for the first data stream; re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream; estimating interference due to the first data stream based on the data symbol estimates; deriving LLRs for code bits of a second data stream based on the received symbols and the estimated interference; adjusting the LLRs for the code bits of the second data stream based on the remodulated symbols and the data symbol estimates for the first data stream; performing an error detection function for the data symbol estimates based on the remodulated symbols; deriving correction factors for the data symbol estimates detected to be in error; and updating LLRs for code bits of the data symbol estimates detected to be in error with the correction factors.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEILA MALEK whose telephone number is (571)272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leila Malek  
Examiner  
Art Unit 2611

/L. M./  
/Leila Malek/  
Examiner, Art Unit 2611

/Mohammad H Ghayour/  
Supervisory Patent Examiner, Art Unit 2611